

# **Northeast Utilities Available Transfer Capacity Implementation Document (ATCID)**

**Effective Date: April 1, 2011**

## **1. Introduction**

ISO is the regional transmission organization (“RTO”), serving the New England Control Area. ISO is responsible for the development, oversight, and fair administration of New England’s wholesale market, management of the bulk electric power system and wholesale markets' planning processes. The ISO serves as the Balancing Authority for the New England Control Area. The New England Control Area is interconnected to three neighboring Balancing Authority Areas (“BAA”): New Brunswick System Operator Area (“NBSO Area”), New York Independent System Operator Area (“NYISO Area”), and Hydro-Quebec TransEnergie Area (“HQTE Area”).

As part of its RTO responsibilities, the ISO is registered with the North American Electric Reliability Corporation (“NERC”) as several functional model entities that have responsibilities related to the calculation of ATC as defined in the following NERC Standards: MOD-001 – Available Transmission System Capability (“MOD-001”), MOD-004 – Capacity Benefit Margin (“MOD-004”), and MOD-008 – Transmission Reliability Margin Calculation Methodology (“MOD-008”). The extent of those responsibilities is based on various Commission approved transmission operating agreements and the provisions of the ISO New England Operating Documents.

While the ISO is the Transmission Service Provider for Regional Network Service (“Regional Transmission Service”) associated with Pool Transmission Facilities, the Participating Transmission Owners (“PTOs”) provide local transmission service over Non-Pool Transmission Facilities within the RTO footprint and are responsible for calculating TTC and ATC associated with Local Transmission Service provided under Schedule 21 pursuant to the Transmission Operating Agreement (“TOA”).

## **2. NU Companies Total Transfer Capability (TTC)**

The Total Transfer Capability (TTC) is the amount of electric power that can be moved or transferred reliably from one area to another area of the interconnected transmission systems by way of all transmission lines (or paths) between those areas under specified system conditions. TTC for Schedule

21-NU is calculated using NERC Standard MOD-029-1 Rated System Path Methodology and posted on the NU Companies' OASIS site.

The NU Companies will calculate and post TTC on its OASIS site for all non-PTF Posted Paths that are eligible for Point-to-Point transmission service reservations. The NU Companies' non-PTF facilities are primarily radial paths that provide transmission service to directly interconnected generators. Further, the TTC on the NU Companies' non-PTF Local Facilities that are eligible for Local Point-to-Point transmission service reservations are relatively static values. The NU Companies thus calculate the TTC as the rating of the limiting line that constitutes that path.

### **3. Capacity Benefit Market (CBM)**

CBM is defined as the amount of firm transmission transfer capability set aside by a TSP for use by the Load Serving Entities. The ISO does not set aside any CBM for use by the Load Serving Entities, because of the New England approach to capacity planning requirements in the ISO New England Operating Documents. Load Serving Entities operating within the New England Control Area are required to arrange for their Capacity Requirements prior to the beginning of any given month in accordance with ISO Tariff, Section III.13.7.3.1 (Calculation of Capacity Requirement and Capacity Load Obligation). Load Serving Entities do not utilize CBM to ensure that their capacity needs are met; therefore, CBM is not applicable within the New England market design. Accordingly, for purposes of the NU Companies' ATC calculation and because CBM for the New England Control Area is set to zero (0), the NU Companies utilize a zero (0) CBM value.

### **4. Existing Transmission Commitments, Firm (ETC<sub>F</sub>)**

The ETC<sub>F</sub> are those confirmed Firm transmission reservations (PTP<sub>F</sub>) plus any rollover rights for Firm transmission reservations (ROR<sub>F</sub>) that have been exercised. There are no allowances necessary for Native Load forecast commitments (NL<sub>F</sub>), Network Integration Transmission Service (NITS<sub>F</sub>), grandfathered Transmission Service (GF<sub>F</sub>) and other service(s), contract(s) or agreement(s) (OS<sub>F</sub>) to be considered in the ETC<sub>F</sub> calculation.

### **5. Existing Transmission Commitments, Non-Firm(ETC<sub>NF</sub>)**

The (ETC<sub>NF</sub>) are those confirmed Non-Firm transmission reservations (PTP<sub>NF</sub>). There are no allowances necessary for Non-Firm Network Integration Transmission Service (NITS<sub>NF</sub>), Non-Firm grandfathered Transmission Service (GF<sub>NF</sub>) or other service(s), contract(s) or agreement(s) (OS<sub>NF</sub>).

## **6. Transmission Reliability Margin (TRM)**

TRM is the amount of transmission transfer capability set aside to provide reasonable assurance that the interconnected transmission network will be secure. TRM accounts for the inherent uncertainty in system conditions and the need for operating flexibility to ensure reliable system operation as system conditions change. It is used only for external interfaces under the New England market design. The NU Companies do not have any external interfaces, and therefore TRM for the NU Companies' non-PTF facilities is zero.

## **7. Counterflows**

As stated before, The NU Companies' non-PTF facilities are primarily radial paths that provide transmission service to directly interconnected generators. There are no counterflows on these radial paths.

## **8. Identity of Transmission Operators and Transmission Service Providers**

The radial paths that constitute the non-PTF facilities are owned and operated by Northeast Utilities. There are no transmission Operators or Transmission Service Providers that supply data for use in the calculating ATC of these radial paths. These radial paths have no external interfaces and have no impact on the calculation of transfer capacity of other interfaces. There is no need to provide data to other TSPs and TOs for use in calculation of transfer capacity.

## **9. Allocation Process**

The radial paths that constitute the non-PTF facilities are solely owned by Northeast Utilities. There is no allocation process necessary to allocate transfer capability.

## **10. Generation and Transmission Outages**

As stated before, The NU Companies' non-PTF facilities are primarily radial paths that provide transmission service to directly interconnected generators. As a practical matter, the ratings of the radial transmission paths are always higher than the transmission requirements of the Transmission Customers connected to that path. As such, transmission services over these posted paths are considered to be always available. Hence generator outages are not considered in the calculation of transfer capacity.

For transmission outages of the lines that constitute the non-PTF path, NU recalculates the TTC and ATC of that path. If the transmission outage is more than 12 hours, NU recalculates the daily TTC and ATC. If the outage is more than 15 days, NU recalculates the monthly TTC and ATC.

#### **11. Calculation of ATC for the NU Companies' Local Facilities - General Description:**

NERC Standards MOD-001-1 – Available Transmission System Capability and MOD-029-1 – Rated System Path Methodology define the required items to be identified when describing a transmission provider's ATC methodology. As a practical matter, the ratings of the radial transmission paths are always higher than the transmission requirements of the Transmission Customers connected to that path. As such, transmission services over these posted paths are considered to be always available.

Common practice is not to calculate or post firm and non-firm ATC values for the non-PTF assets described above, as ATC is positive and listed as 9999. Transmission customers are not restricted from reserving firm or non-firm transmission service on non-PTF facilities.

As Real-Time approaches, the ISO utilizes the Real-Time energy market rules to determine which of the submitted energy transactions will be scheduled in the coming hour. Basically, the ATC of the non-PTF assets in the New England market is almost always positive. With this simplified version of ATC, there is no detailed algorithm to be described or posted. Thus, for those non-PTF facilities that serve as a path for the NU Companies' Schedule 21-NU Point-to-Point Transmission Customers, the NU Companies have posted the ATC as 9999, consistent with industry practice. ATC on these paths varies depending on the time of day. However, it is posted with an ATC of "9999" to reflect the fact that there are no restrictions on these paths for commercial transactions.

#### **11.1 Calculation of Schedule 21-NU Firm ATC ( $ATC_F$ )**

##### **11.1.1 Calculation of $ATC_F$ in the Planning Horizon (PH)**

For purposes of this Attachment C PH is any period before the Operating Horizon.

Consistent with the NERC definition,  $ATC_F$  is the capability for Firm transmission reservations that remain after allowing for TRM, CBM,  $ETC_F$ ,  $Postbacks_F$  and  $counterflows_F$ .

As discussed above, TRM and CBM are zero. Firm Transmission Service under Schedule 21-NU that is available in the Planning Horizon (PH) includes: Yearly, Monthly, Weekly, and Daily. Postbacks<sub>F</sub> and counterflows<sub>F</sub> of Schedule 21-NU transmission reservations are not considered in the ATC calculation. Therefore, ATC<sub>F</sub> in the PH is equal to the TTC minus ETC<sub>F</sub>

### **11.1.2 Calculation of ATC<sub>F</sub> in the Schedule 21-NU Operating Horizon (OH)**

For purposes of this Attachment C OH is noon eastern prevailing time each day. At that time, the OH spans from noon through midnight of the next day for a total of 36 hours. As time progresses, the total hours remaining in the OH decreases until noon the following day when the OH is once again reset to 36 hours.

Consistent with the NERC definition, ATC<sub>F</sub> is the capability for Firm transmission reservations that remain after allowing for ETC<sub>F</sub>, CBM, TRM, Postbacks<sub>F</sub> and counterflows<sub>F</sub>.

As discussed above, TRM and CBM is zero. Daily Firm Transmission Service under Schedule 21-NU is the only firm service offered in the Operating Horizon (OH). Postbacks<sub>F</sub> and counterflows<sub>F</sub> of Schedule 21-NU transmission reservations are not considered in the ATC<sub>F</sub> calculation. Therefore, ATC<sub>F</sub> in the OH is equal to the TTC minus ETC<sub>F</sub>.

**11.1.3** Because Firm Schedule 21-NU transmission service is not offered in the Scheduling Horizon (SH): ATC<sub>F</sub> in the SH is zero.

## **11.2 Calculation of Schedule 21-NU Non-Firm ATC (ATC<sub>NF</sub>)**

### **11.2.1 Calculation of ATC<sub>NF</sub> in the PH**

ATC<sub>NF</sub> is the capability for Non-Firm transmission reservations that remain after allowing for ETC<sub>F</sub>, ETC<sub>NF</sub>, scheduled CBM (CBM<sub>S</sub>), unreleased TRM (TRM<sub>U</sub>), Non-Firm Postbacks (Postbacks<sub>NF</sub>) and Non-Firm counterflows (counterflows<sub>NF</sub>).

As discussed above, the TRM and CBM for Schedule 21-NU are zero. Non-Firm ATC available in the PH includes: Monthly, Weekly, Daily and Hourly. TRM<sub>U</sub>, Postbacks<sub>NF</sub> and counterflows<sub>NF</sub> of Schedule

21-NU transmission reservations are not considered in this calculation. Therefore,  $ATC_{NF}$  in the PH is equal to the TTC minus  $ETC_F$  and  $ETC_{NF}$ .

### **11.2.2 Calculation of $ATC_{NF}$ in the OH**

$ATC_{NF}$  available in the OH includes: Daily and Hourly.

As discussed above TRM and CBM for Schedule 21-NU are zero.  $TRM_U$ , counterflows and  $ETC_{NF}$  are not considered in this calculation. Therefore,  $ATC_{NF}$  in the OH is equal to the TTC minus  $ETC_F$ , plus postbacks of  $PTP_F$  in OH as  $PTP_{NF}$  (Postbacks<sub>NF</sub>)

### **11.3 Negative ATC**

As stated above, the ratings of the radial transmission paths are always higher than the transmission requirements of the Transmission Customers connected to that path. As such, transmission services over these posted paths are considered to be always available.

As stated above, the NU Companies' non-PTF facilities are primarily radial paths that provide transmission service to directly interconnected generators. It is possible, in the future, that a particular radial path may interconnect more nameplate capacity generation than the path's TTC. However, due to the ISO's security constrained dispatch methodology, the ISO will only dispatch an amount of generation interconnected to such path so as not to incur a reliability or stability violation on the subject path. Therefore, ATC in the PH, OH and SH may become zero, but will not become negative.

## **12. Posting of Schedule 21-NU ATC**

### **12.1 Location of ATC Posting**

ATC values are posted on the NU Companies' OASIS site.

### **12.2 Updates To ATC**

When any of the variables in the ATC equations change, the ATC values are recalculated and immediately posted.

### **12.3 Coordination of ATC Calculations**

Schedule 21-NU non-PTF has no external interfaces. Therefore it is not necessary to coordinate the values.

**12.4 Mathematical Algorithms** A link to the actual mathematical algorithm for the calculation of ATC for the NU Companies non-PTF internal interfaces is located at <http://www.transmission-nu.com/business/pdfs/Attachment%206.pdf>

## 8. Process Flow Diagram for ATC Calculation

### Non-PTF Transmission Path ATC Process Flow Diagram

